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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,142	09/29/2000	John A. Higgins	00SC048US7	2762

7590 06/17/2002  
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EXAMINER	
LEE, BENNY T	
ART UNIT	PAPER NUMBER

2817

DATE MAILED: 06/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

0967602



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SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.

EXAMINER	
ART UNIT	PAPER NUMBER
	9

DATE MAILED:

This is a communication from the examiner in charge of your application.

COMMISSIONER OF PATENTS AND TRADEMARKS

☒ This application has been examined ☒ Responsive to communication filed on 19 March 2002 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire three (3) month(s), \_\_\_\_\_ days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

## Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |  |   |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited by Examiner, PTO-892.       | 2. <input type="checkbox"/> Notice to Patent Drawing, PTO-948.                  |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449  | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474 | 6. <input type="checkbox"/> _____   |

## Part II SUMMARY OF ACTION

1. ☒ Claims 1-30 are pending in the application.  
Of the above, claims 8-30 are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1-7 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings which are acceptable for examination purposes until such time as allowable subject matter is indicated.
8. ☐ Allowable subject matter having been indicated, formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_. Those drawings are: ☐ acceptable;  
☐ not acceptable (see explanation).
10. ☐ The ☐ proposed drawing correction and/or the ☐ proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_ has (have) been ☐ approved by the examiner. ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved. ☐ disapproved (see explanation). However, the Patent and Trademark Office no longer makes drawing changes. It is now applicant's responsibility to ensure that the drawings are corrected. Corrections MUST be effected in accordance with the instructions set forth on the attached letter "INFORMATION ON HOW TO EFFECT DRAWING CHANGES", PTO-1474.
12. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☐ been received ☐ not been received  
☐ been filed in parent application, serial no. \_\_\_\_\_; filed on \_\_\_\_\_
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

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Applicant's election without traverse of Species I, claims 1-7 in Paper No. 8 is acknowledged. Claims 8-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made without traverse in Paper No. 8.

The disclosure is objected to because of the following informalities: Page 1, line 23, note that a ~~--~~ after "increase" is suggested for grammatical correctness. Page 2, line 11, note that "Gaussian" should be correctly spelled as ~~--Gaussian--~~<sup>a</sup>. Page 3, line 31 and page 4, line 28, note that ~~--the--~~ should precede "resonant" for grammatical correctness. Page 3, line 32, note that "structure presents as" should be rephrased as ~~--this structure presents a--~~ for clarity of description. Page 6, line 21, note that "has a having" is vague in meaning and needs rephrasing. Page 7, line 10, note that "only the TEM" appears to be an incomplete recitation (i.e. TEM what?). Page 9, line 5, note that ~~--Ev--~~ should follow "signals" for clarity of description. Page 10, line 22, note that "patches 18" should properly be ~~--strips 18--~~ for consistency of description. Page 12, line 10, note that ~~--(e.g. insulating Ga As)--~~ should follow "dielectric" for consistency of description; line 14, similarly ~~--~~ V-- should follow "voltage"; line 16, likewise, ~~--inductance--~~ should precede "vias "; line 22, finally note that ~~--(i.e. variable capacitance)--~~ should follow "varactor". Page 13, lines 19, 26, 27, note that reference to "55A" and "48 and 48" are respectively vague in meaning. Page 14, line 23, note that ~~--as best seen in Fig. 10--~~ should follow "98" for clarity of description; line 25, similarly note that ~~--(see Fig. 9)--~~ should follow "99"; line 32, note that reference to "curve 52" is

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vague in meaning. Page 15, line 32; page 16, lines 1, 26; note that "chip(s) 106" should correctly be --chip(s) 108--. Page 16, lines 13, 16, note that "section 108" should correctly be --section 106--. Page 18, lines 26, 29, note that "waveguides 112" should properly be --waveguides 113--. Page 19, line 6, note that --as best seen in Fig. 13-- should follow "side" for clarity of description. Note that the following reference labels need description in the specification: fig. 1 (15, 17); fig. 4 (44, 46).

Appropriate correction is required.

The drawings are objected to because of the following: In Fig. 5, reference label --48a-- needs to be provided; In fig. 8, should the "chip" be correctly labeled --108-- rather than "106"?; In Fig. 14, note that reference label --140-- needs to be provided. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, note that it is unclear which "walls structures" are intended, especially if the "at least one pair of opposing impedance wall structures" are more than one such pairs. Note that it is unclear relative to what reference are "higher frequencies" considered (e.g. to the resonant frequency, etc?).

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In claims ~~2, 3~~, note that "said wall structures" remain unclear for reasons set forth in the preceding rejection. Moreover, it is unclear how "a resonant frequency" relates to "a resonant frequency" as recited in claim 1 (e.g. same as, different from, etc).

In claim 7, note ~~that~~ that it is unclear how "a waveguide signal" relates to the earlier recited "resonant frequency ~~signal~~" (e.g. same, different, etc).

The following claims have been found objectionable for reasons set forth below:

In claim 1, line 8, note that ~~--frequency--~~ should follow "resonant" for consistency of description. Note that ~~"its"~~ should be rewritten to indicate the desired feature/limitation.

In claim 6, note ~~that~~ that "form" should be rewritten as ~~--defines--~~ to avoid the method connotation.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by the Kim et al paper (cited by applicant's).

The Kim et al paper in Fig. 1(a), a cross-sectional view of a waveguide having a pair of vertically oriented high impedance walls which present a high impedance to an electric (E) field perpendicular thereto (i.e. terminates the E field at the high impedance surface (see last few lines in the first paragraph in section II). As depicted in Fig. 1© and described in the last few lines of

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the first paragraph in section II, the high impedance surfaces comprise a plurality of parallel conductive strips disposed on a respective substrate which are interconnected by a plurality of conductive vias through the substrate to an opposite ground plane in electrical contact with the waveguide walls. The strips permit longitudinal current flow therealong while a series of resonant LC circuit is inherently formed by the capacitive gaps between strips and the inductance of the vias through the dielectric substrate. As is evident from Fig. 2, which depicts wave (propagation characteristic) number vs frequency, there is a resonant frequency (FLC) at 15.1 Ghz in which the TE<sub>10</sub> characteristic curves of frequencies above (fLC) precedes into a "slow wave region" or a delay region which inherently corresponds to effecting a phase shift of the signals, as would have been recognized by one of ordinary skill. Moreover, in the slow wave region, such TE<sub>10</sub> characteristic would have been a capacitive reactance, especially since the wave number in such region would have been imaginary, thus providing capacitive reactance.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-7 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11, 18, 20-22 are of copending Application No. 408992 in view of the Kim et al paper (cited by applicants')

Claim 1 of the present application corresponds to claim 11 of the '992 application except for the reference to the resonant frequency and the phase shift effect above the resonant frequency . Similarly, claims 1 and 4 of the present application correspond to claim 18 of the '992 application except for the resonant frequency and phase shift limitation as noted above. Likewise dependent claims 2, 3, 5-7 correspond to claims 20-22 of the '992 application.

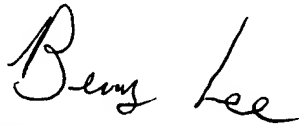
As described in the above prior art rejection, the Kim et al paper, having a like structure to that claimed in the '992 application, provides for a resonant frequency and in a region above the resonant frequency effects a reactive or imaginary characteristic for slow wave (i.e. delay) propagation thereby effecting a corresponding phase shift.

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Accordingly, in view of such a teaching by Kim et al, obviously those of ordinary skilled in the art would have recognized that the claimed invention on the '992 application would have likewise provided a resonant frequency and a phase shift effect above the resonant frequency.

This is a provisional obviousness-type double patenting rejection.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (703) 308-4902.

A handwritten signature in cursive script that reads "Benny Lee".

BENNY T. LEE  
PRIMARY EXAMINER  
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B. Lee/mm

06/11/02